Remarks

Claims 1-25 are pending. Claims 18 and 26-27 have been canceled without prejudice or disclaimer for the reasons below. Claims 1 and 17 were amended for the reasons below. Claim 11 was amended for antecedent basis purposes. Claims 19 and 20 were amended to provide proper claim dependency. Claims 21 and 23 were amended to correct minor grammatical errors. Applicants respectfully submit that no new matter has been added. Accordingly, claims 1-17 and 19-25 are now pending.

Based on the foregoing amendments and the following remarks, Applicants respectfully request reconsideration of the outstanding rejections and passage of the claims to allowance.

Election/Restrictions

Restriction to one of the following inventions was required under 35 U.S.C. 121:

I. Claims 1-25, drawn to an optical fiber gripping device and an optical fiber splice, classified in class 385, subclass 135 and 136; and

II. Claims 26-27, drawn to a method of making an optical fiber gripping device, classified in class 385, subclass 136.

During a telephone conversation between the Examiner and the undersigned on March 30, 2005, a provisional election was made without traverse to elect Group I, claims 1-25, for prosecution. Such election is hereby affirmed and claims 26 and 27 have been canceled without prejudice or disclaimer.

§ 102 Rejections

Claims 1-5, 12, 14-20 and 25 were rejected under 35 USC § 102(b) as being anticipated by Patterson (US 5,102,212). Without acquiescing to the propriety of the rejections, Applicants have amended independent claims 1 and 17 to recite that the outer perimeter of the fiber, or at least one of the first and second fibers, "is softer than the material of the gripping portions." The present application provides support for this amendment, *inter alia*, at page 6, lines 14-29.

In contrast, Patterson teaches the opposite -- a splice device having a gripping region that comprises a material that is softer than the optical fiber being gripped. *See e.g.*, Patterson, col. 5, lines 53-54. Patterson does not disclose a fiber having an outer perimeter that is softer than the

gripping portions. Accordingly, it is respectfully submitted that Patterson does not anticipate claims 1 and 17, or their respective dependent claims.

Applicants respectfully submit that the rejection of claims 1-5, 12, 14-20 and 25 under 35 USC § 102(b) as being anticipated by Patterson has been overcome and should be withdrawn.

§ 103 Rejections

Claims 6-9 were rejected under 35 USC § 103(a) as being unpatentable over Patterson.

Claims 10-11, 13, 21 and 22 were rejected under 35 USC § 103(a) as being unpatentable over Patterson in view of Novack et al (US Re. 36,146). Applicants note that both Patterson and Novack are assigned to the assignee of the presently pending application.

Claim 23 was rejected under 35 USC § 103(a) as being unpatentable over Patterson in view of Calvet et al (US 4,675,136 A).

Claim 24 was rejected under 35 USC § 103(a) as being unpatentable over Patterson in view of Wang et al (US 6,471,417 B1).

Applicants respond as follows.

Amended claim 1 recites "wherein the outer perimeter of the optical fiber is softer than the material of the gripping portions." Applicants respectfully submit that the combination of Patterson and Novack does not teach or suggest the device of claim 1.

First, Patterson teaches the use of a splice element having a v-grooved shaped gripping region that is constructed from a deformable material, such as aluminum, where the surfaces contacting the fiber are designed to deform, upon compressive contact, to shape of the fibers being spliced. See e.g., Patterson, Figs. 1-5, col. 5, line 45, and lines 55-60. Patterson does not contemplate gripping a fiber with an outer perimeter that is softer than the gripping region.

In particular, Patterson teaches away from the exemplary gripping device of the claims. For example, Patterson states the following at col. 5, lines 52 et seq.,

> Both alloys provide a material which is much softer than the glass of the optical fiber and the cladding but ductile under the clamping pressures applied to the optical fibers. Such deformation is sufficient that the surfaces 23, 18 and 30 conform to the optical fibers contacted and should one fiber be larger than another, the surfaces will deform sufficiently to clamp onto both fiber ends and be deformed even by the smallest of the two fibers. Thus, the splice element 11 will center the cores of the optical fibers such that in aligned position 90% or better of the surfaces of the core portions of the fiber ends will be aligned. The material of the sheet 12 is also resilient such that the elastic limit of the material in the hinge areas and lever means afforded by the side portions is not exceeded when the side portions are folded to contact and clamp a [fiber] therein.

The use of a conventional v-groove shaped splice element would not work when splicing a fiber with a softer perimeter. For example, as indicated on page 7 (lines 24 et seq.) of the present application, "[f]or these conventional v-groove based products, if a protective-coated fiber (e.g., having a polymer-based coating) is inserted in gripping region 25, the protective coating can crack under the compressive loads, either on a splice or under later temperature cycling, thereby degrading connectivity and/or optical performance. Further, concentrated or localized forces on a protective coating could generate fiber misalignment over time." Applicants further provide FEA models comparing a conventional v-groove gripping device to a gripping device designed to provide a substantially even distribution of force to the outer perimeter in Figs. 6A and 6B. As stated in the present application, "the FEA analysis illustrates that the maximum compressive stress placed on a fiber can be significantly reduced (here, in this example, by a factor of about 2.73) when utilizing a gripping device according to exemplary embodiments of the present invention." See Application, page 8, lines 11-14.

As indicated in the accompanying Affidavit of co-inventor James Carpenter, tests performed using a conventional v-groove shaped splice device to grip a fiber having an outer perimeter softer than the gripping region confirm that both fiber damage and poor fiber retention can occur using the conventional splice device. See Carpenter Affidavit, paragraphs 5-8.

Thus, the above evidence indicates that Patterson's device does not work to splice a fiber with a softer perimeter. Further, while Novack teaches GGP fiber composition and construction, Novack is silent as to a device that can be used to grip or splice a polymer-coated optical fiber.

Thus, if one of ordinary skill in the art were to have combined the teachings of Patterson and Novack, the combination would not have worked.

As neither Patterson nor Novack address the effects of using conventional splices for fibers having a softer perimeter, it is respectfully submitted that neither reference provides the necessary motivation to modify the teachings of the cited art to produce the claimed invention. Thus, one of ordinary skill in the art using the device taught in Patterson to splice the fiber taught in Novack would not have produced Applicants' claimed invention.

Applicants note that the Office Action, at paragraph 6, indicates that "[a]nd as seen in Fig. 12, 15, and 16, the grooves are semicircular shape" is not accurate. In contrast, as is pointed out at Patterson, col. 7, lines 64 et seq., "The recesses 94 and 95 cooperate with the concave

recesses 80 and 81, and the conical surfaces to define funnel-shaped fiber guiding openings..." Applicants respectfully submit that these *guiding openings* do not grip the fiber – instead, the v-groove shaped region having surfaces 78, 79, and 86 (see Fig. 15) are used to grip the fiber.

Applicants also respectfully submit that the comments stated in the Office Action at page 6, paragraph 14, are misplaced – the motivation for producing Applicants' claimed invention is not based on increasing the malleability of the splicing element, as the perimeter of the optical fiber being gripped or spliced is softer than the gripping region. Applicants' claimed device does not include a gripping region of "increased malleability" as pointed out in the office action – in contrast, the gripping region is designed to provide a substantially even distribution of force to the softer perimeter of the fiber.

Further, regarding independent claim 17, the amended claim now recites "wherein the outer perimeter of at least one of the first and second optical fibers is softer than the material of the gripping portions." Applicants respectfully submit claim 17 is patentable over the cited art for at least the reasons above.

Accordingly, for at least the reasons stated above, Applicants respectfully submit that the pending claims are patentable over the art of record.

Conclusion

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested. Please contact the undersigned should there be any questions or in order to expedite prosecution.

Respectfully submitted,

8/8/05
Date

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